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ABSTRACT

As the number of World Wide Web sites continues to grow at an explosive rate, the need for design guidelines also increases. Although there are a number of resources that provide guidance on structure and content, few address the motivational aspects of Web sites. The Website Motivational Analysis Checklist (WebMAC) was developed to help diagnose the motivational quality of sites on the World Wide Web. WebMAC is based, in part, on Keller's ARCS Model of Motivational Design, and also incorporates many of the attributes that define the information science concept of "relevance," a critical concept in information retrieval. WebMAC specifies four general motivational criteria of Web sites: (1) Engaging--offers eye-catching visuals, attractive screen layout, humor, varied activities, novelty, and diverse and well-written content; (2) Meaningful--offers a statement of the purpose and importance of the site, accurate and updated information, meaningful examples and analogies, and quick and easy links to other relevant sites; (3) Organized--offers a site overview, summaries of key points, a help interface, and definitions of terms; and (4) Enjoyable for both the extrinsically and intrinsically motivated user--positive feedback on progress, user-controlled external rewards (such as animation), and quick response speed. WebMAC allows the designer or evaluator to assess the motivational quality of each of the four categories and plot a score on a graph, providing quick visual assessment of the site's strengths and weaknesses. The current version of the instrument is included. (Contains 11 references.) (Author/SWC)

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Assessing the Motivational Quality of World Wide Websites

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Introduction

As the number of World Wide Web sites continues to grow at an explosive rate, the need for design guidelines also increases. Although there are a number of resources that provide guidance on such structure and content, few, if any, address the motivational aspects of Web sites. As millions of people are now "surfing the net," how can a Website attract the surfer, interest him/her long enough to explore the website, and motivate him/her to return to the website. In response to this need, the Website Motivational Analysis Checklist© (WebMAC) has been developed to help diagnose the motivational quality of sites on the World Wide Web.

Design of the WebMAC Instrument

The WebMAC instrument was created based on a number of theories and models, such as Keller's ARCS Model, that relate to the motivational quality of World Wide Websites. In addition, WebMAC incorporates many of the attributes that define the information science concept of "relevance," a critical concept in information retrieval (the main purpose of website use). A description of these two different but related areas and their relation to the WebMAC are presented below.

The ARCS Model of Motivational Design

The ARCS Model of Motivational Design (Keller, 1983; 1987) is founded on a number of motivational theories and concepts including expectancy value theory, achievement motivation, attribution theory, and reinforcement theory. Although created for use in instructional situations, some of the model's components may also be useful in describing the motivational characteristics of websites.

The ARCS Model identifies four essential motivational strategy components. Those components and some potential strategies for website design and assessment are:

- [A]ttention strategies for arousing and sustaining curiosity and interest (e.g. providing novelty , surprise or mystery, varying text and visuals);
- [R]elelevance strategies that link to needs, interests, and motives (e.g. clearly stated purpose and usefulness, user-control, familiar examples);
- [C]onfidence strategies that help develop a positive expectation for successful achievement of a task (e.g. hot links to definitions, opportunities for review, simple clear directions)
- [S]atisfaction strategies that provide extrinsic and intrinsic reinforcement for effort expended (e.g. opportunity to provide user feedback on website effectiveness, printing capability, links to other websites of interest) (Keller, 1983).

In the context of a website, information should be presented in a way that is engaging and meaningful to the user, organized for ease of access and use, and satisfying so that visiting the website is an enjoyable experience.

The ARCS Model has been applied to a number of instructional situations and has provided the framework for several instruments that measure the motivational quality of a variety of educational materials and technologies. Three of these instruments, the IMMS (Keller, 1987), software design guidelines (Keller and Suzuki, 1988), and multimedia (Keller and Keller, 1992), provided initial guidance for the structure and content of the WebMAC instrument.

Relevance

Relevance has been called a "central concept" to information science ---"the fundamental criterion for evaluating the effectiveness of information retrieval (IR) and use" (Schamber, 1994, p. 3). While there have been debates about the definition of relevance in the information retrieval field, Schamber (1994) has provided a useful synthesis of the literature which includes a table of eighty selected relevance factors. She divides these factors into six categories: judges, requests, documents, information system, judgment conditions, and choice of scale with a number of relevance factors listed below each category. Although all of these factors are relevant to the design of a motivational quality instrument, factors pertaining to the document and information system categories appear to be the most appropriate for inclusion in the WebMAC.

25

Schamber (1993) has identified a number of factors [drawn from the work of Cuadra and Katter (1967), Rees and Schultz (1967) and Cooper (1971; 1973)] that describe the relevance of documents within a system. Some of these factors are particularly suited to describing the motivational quality of web documents. They include accuracy, aesthetic value, credibility, importance, interesting content, logical relevance, novelty, recency, and usefulness (Cooper, 1971; 1973, Rees & Schultz, 1967), as well as difficulty level and diversity of content (Cuadra & Katter, 1967).

Most of the factors that are used to describe the relevance of the information system itself come from Taylor's Value-Added Model (1986)—“a model that would be useful in the description of information-providing systems of any type, and eventually in their design (p. 54). Taylor describes three parts to the information process: the user, the interface, and the system. The user is characterized as an active information seeker; the interface is the “negotiating space” between user and system, and the system, defined as “a coherent series of value-added processes producing varying outputs” (p. 49). This model identifies six general user criteria that add value to an information system, four of which are particularly related to the motivational quality of websites. They include ease of use, noise reduction, quality, and adaptability. Each of these categories has a number of subcomponents that are highly appropriate for assessing the motivational quality of a website, including:

- currency and reliability of information.
- ease of physical access (e.g. to the website), ease of intellectual access (e.g. locating specific information within the website).

- consistent, standardized format (e.g. navigational buttons maintain consistent shape and location),
- an interface that provides both help and orientation,
- ordering (e.g. logical organization of information),
- browsing capability (e.g. exploring information within the website)
- linkage (e.g. links to relevant websites),
- response speed (e.g. use of quickly loadable graphics),
- selectivity (e.g. user-control of where to go and what information to access),
- simplicity (e.g. clarity of directions),
- consistency of coverage (only includes information relevant to topic),
- comprehensive coverage (appropriate amount of information provided),
- pointers to information (e.g. menus, indexes, hot buttons), and
- variety of access points to information (ability to access information in more than one way and from various points in the system).

All of these factors have been considered in the development of the WebMAC instrument.

Factors, specified in both the motivation and information retrieval (relevance) literature, appropriate to websites have been incorporated into the WebMAC instrument. The WebMAC specifies four general categories of a motivational website: Engaging, Meaningful, Organized, and Enjoyable.

Engaging

A motivating Website must engage the user. It must provide what Keller (1983, 1987) terms "perceptual arousal"; that is, it must gain the user's attention immediately. Initial engagement must occur at the Website starting point, the home page. The use of eye-catching visuals, attractive screen layout, and humor are all strategies that can grab the user's interest and arouse his/her curiosity.

Once the user is at the website, it is important to continue using a number of strategies that maintain engagement in the material. For example, by occasionally varying the look of and activities at the site, by providing novelty, or by including interesting, diverse, and well written content, a user is more likely to continue to use the site, recommend the site to others, and return to the site in the future.

Meaningful

Relevance of a site must be established at the moment of access. Some strategies that provide a meaningful context to users are stating the purpose and importance of the website, establishing the site's credibility through accurate, updated information, using meaningful examples and analogies, and providing quick and easy links to other relevant sites.

Organized

A clearly organized website helps the user feel confident that he/she can access needed information or browse through the site easily and quickly. Motivational strategies such as a site overview, summaries of key points for large sections of text, an interface that provides both help when needed and orientation to the entire

website, and access to definitions of terms indicate a logical organization and structure to the site.

Enjoyable

Most users visit the World Wide Web for one of two reasons: to find information needed for educational purposes (generally more extrinsically motivated) and to find information desired for personal use (generally more intrinsically motivated). The extrinsically motivated user explores the website as a means to finding the needed information in order to satisfy the parameters set by an external force (e.g. teacher) and receive the reward (e.g. grade), while an intrinsically motivated user (e.g. "surfer") enjoys the activity for its own sake. Although users may start out extrinsically motivated to explore a site, there are a number of design strategies that provide satisfaction and enjoyment so that users will decide to return to that site or explore similar sites.

A number of motivational strategies may be applied to the design of a website in response to both types of motives; for example, positive feedback on progress, user-controlled external rewards (e.g. animation), quick response speed, an aesthetically pleasing interface, and links to external sources of information.

Application

The WebMAC provides an opportunity for structured analysis of the motivational quality of World Wide Web sites. The earliest version of the instrument was used in an assignment for a graduate-level class on "Motivational Aspects of Information Use" at the School of Information Studies at Syracuse University during the spring 1997

semester. Students were required to select a website and, using WebMAC, analyze the site on the basis of a set of 41 items and were encouraged to contribute new items that were not included on the original checklist as they conducted their motivational assessments. As a result, the instrument was revised and the current version contains a total of 60 items, 15 for each category.

The WebMAC allows the designer or evaluator to assess the motivational quality of each of the four categories and plot a score on a graph. This allows quick visual assessment of the strengths and weaknesses of the site. The reasonable length of the instrument allows the user to easily pinpoint specific areas for improvement. Testing and validation of the instrument is ongoing. The current version of the instrument is presented below.

Note: The author wishes to thank Norshahriza Abdulkarim, Mary Barry, Joseph Cox, Stephanie Hodkinson, and Julie Knecht, graduate students in the School of Information Studies at Syracuse University, for their invaluable assistance in the initial testing of the WebMAC instrument.

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Website Motivational Analysis Checklist (WebMAC)

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May 1997

Rater's Name _____
Title of Website _____
URL _____

Directions: This instrument identifies four major categories of criteria for assessing the motivational quality of World Wide Web sites. The categories are: Engaging, Meaningful, Organized, and Enjoyable. For each category, a list of design strategies that may contribute to the overall motivational quality of a website.

- 1) Select a website for analysis. First go through as much of the website as possible in order to have some familiarity with its contents and structure. You may need to go through it at least once more to complete this checklist.
- 2) Start with the list of ENGAGING strategies. Read each strategy and determine first if it is present (P) at the selected website. If present, place a "1" in the lefthand column preceding that strategy; if not present, place a "0" on the line..
- 3) Then go through each of the strategies marked with a "1" and decide if it has been used effectively (yes=1; no=0).
- 4) Add up the P column and the E column; then add the total P and E together to get one score for ENGAGING.
- 5) Plot the score on the graph on page 5.
- 6) Continue in the same manner for each of the other categories.

The graph you have at the end of this process will provide you with some understanding of the strengths and weaknesses of the motivational quality of the website analyzed.

Website URL _____ WebMAC, p. 1

Put a 1 in the P column if the strategy is (P)resent and a 0 if it is not. Rate each present strategy for (E)ffectiveness (yes=1; no=0). Add up the P and E columns. Then add the P and E subtotals for a total ENGAGING score.

ENGAGING

<i>P</i>	<i>E</i>	<i>Strategy</i>
___	___	Eye-catching title and/or visual on home page.
___	___	Attractive screen layout.
___	___	Interesting content.
___	___	Surprise, novelty or mystery elements.
___	___	Use of animation or other moving images.
___	___	Use of humor.
___	___	Diversity of content.
___	___	Variations in use of text, images, and sound.
___	___	Crisp, clear graphics.
___	___	Pleasing colors and background patterns.
___	___	Chunking or segmenting of content for readability.
___	___	Large text chunks are broken up with relevant visuals and white space.
___	___	Well-written grammatical text, free of typos and misspellings.
___	___	Occasional change of pace.
___	___	Interactivity
___	___	SUBTOTALS for P and E columns
___	___	TOTAL P+E for ENGAGING

Plot the ENGAGING total P + E on the graph on page 5.

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Put a 1 in the P column if the strategy is (P)resent and a 0 if it is not. Rate each present strategy for (E)ffectiveness (yes=1; no=0). Add up the P and E columns. Then add the P and E subtotals for a total MEANINGFUL score.

MEANINGFUL

<i>P</i>	<i>E</i>	<i>Strategy</i>
----------	----------	-----------------

- | | | |
|-----|-----|--|
| ___ | ___ | Clearly defined purpose and usefulness. |
| ___ | ___ | Appropriate level of knowledge or skills required. |
| ___ | ___ | Accurate, reliable information. |
| ___ | ___ | Familiar vocabulary and examples. |
| ___ | ___ | Use of metaphors and/or analogies. |
| ___ | ___ | Credible sources of information. |
| ___ | ___ | Content consistent with purpose. |
| ___ | ___ | User-control of amount of information accessed. |
| ___ | ___ | User-control of type of information accessed. |
| ___ | ___ | User-control of difficulty level of content. |
| ___ | ___ | User-controlled navigation through content. |
| ___ | ___ | Opportunities for individual or cooperative group use. |
| ___ | ___ | Updated information. |
| ___ | ___ | Lack of superfluous or redundant information. |
| ___ | ___ | Links to other relevant websites |
| ___ | ___ | SUBTOTALS for P and E columns |
| ___ | ___ | TOTAL P+E for MEANINGFUL |

Plot the MEANINGFUL total P + E on the graph on page 5.

Website URL _____ WebMAC, p. 3

Put a 1 in the P column if the strategy is (P)resent and a 0 if it is not. Rate each present strategy for (E)ffectiveness (yes=1; no=0). Add up the P and E columns. Then add the P and E subtotals for a total ORGANIZED score.

ORGANIZED

<i>P</i>	<i>E</i>	<i>Strategy</i>
___	___	Simple, clear directions.
___	___	Orienting cues for navigation.
___	___	Access to system help at all times.
___	___	Informative feedback that indicates information accessed and yet unaccessed.
___	___	Multiple entry points.
___	___	Summaries at key points of large text chunks.
___	___	Hot links to definitions and explanations.
___	___	Consistent placement of navigational mechanisms.
___	___	Control of pacing (when and how fast to move through the system)
___	___	Opportunities to go back, review, or return to home page at any time
___	___	Prerequisite or supplementary information needed to proceed successfully provided.
___	___	Glossary of terms.
___	___	Introduction to or overview of scope of content provided on home page.
___	___	Browability.
___	___	Logical organization and sequence of content.
___	___	SUBTOTALS for P and E columns
___	___	TOTAL P+E for ORGANIZED

Plot the ORGANIZED total P+E on the graph on page 5.

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Title _____ URL _____ WebMAC, p. 4

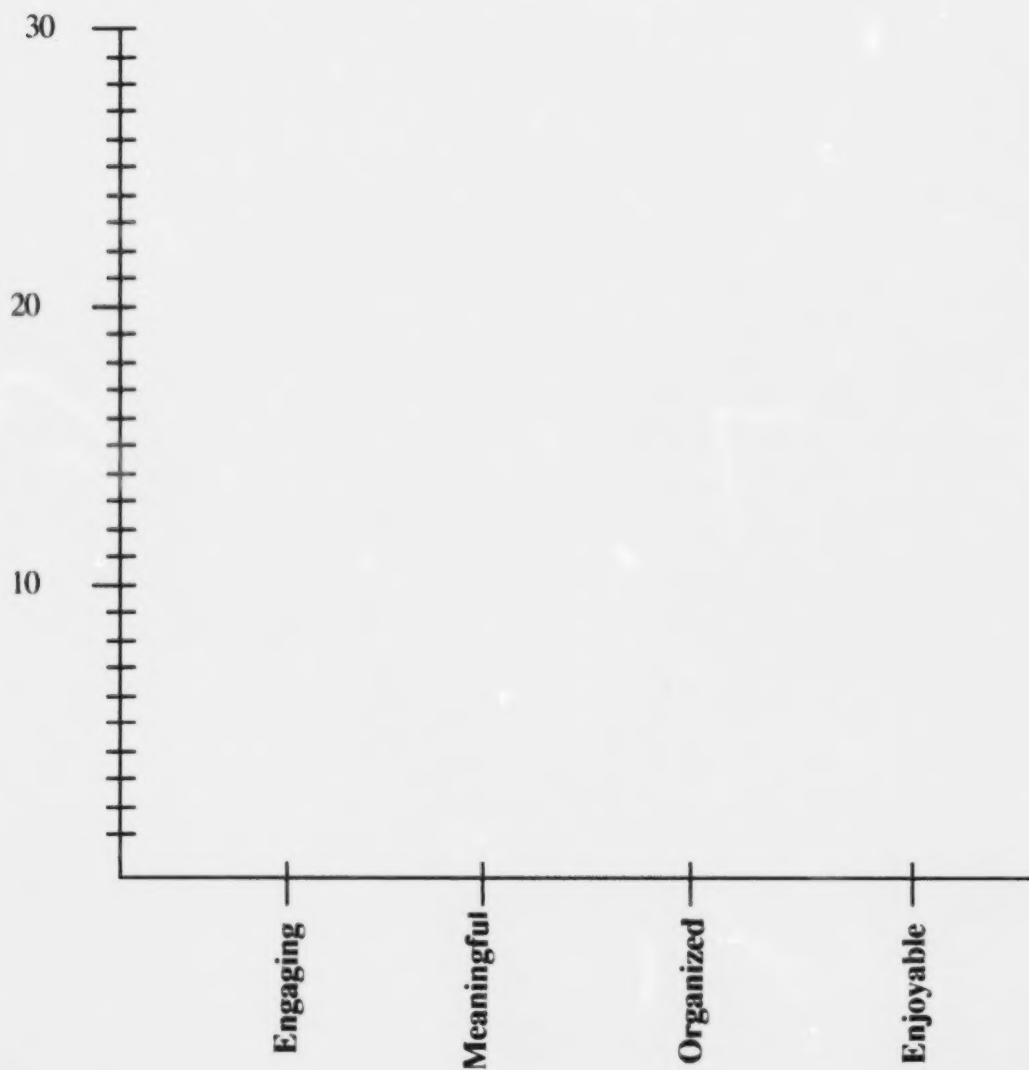
Put a 1 in the P column if the strategy is (P)resent and a 0 if it is not. Rate each present strategy for (E)ffectiveness (yes=1; no=0). Add up the P and E columns. Then add the P and E subtotals for a total ENJOYABLE score.

ENJOYABLE

<i>P</i>	<i>E</i>	<i>Strategy</i>
___	___	Adequate response speed (minimum of high-end graphics).
___	___	Opportunities for user feedback direct to authors with timely response.
___	___	Adequate coverage of topic.
___	___	Aesthetically pleasing.
___	___	Positive feedback on progress.
___	___	Intrinsically and/or extrinsically rewarding.
___	___	Consistent structure, flow, and information.
___	___	Easy to use.
___	___	All links active.
___	___	Links to other websites of interest.
___	___	Information about other types of related materials (e.g. books, videos).
___	___	Appropriate amount of information..
___	___	Link to home page at any time.
___	___	Time effective (only relevant information included).
___	___	Capability to print out all or any part of the website.
___	___	SUBTOTALS for P and E columns
___	___	TOTAL P+E for ENJOYABLE

Plot the ENJOYABLE total P+E on the graph on page 5.

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Note: Low scores in one or more categories may indicate (1) the need for more strategies (check P columns) or (2) the need for improved strategies (check E columns)

References

- Cooper, W.S. (1971, June). A definition of relevance for information retrieval. *Information Storage and Retrieval*, 7(1), 19-37.
- Cooper, W.S. (1973, March/April). On selecting a measure of retrieval effectiveness. *Journal of the American Society for Information Science*, 24 (2), 87-100.
- Cuadra, C.A. and Katter, R.V. (1967). *Experimental Studies of Relevance Judgements Final Report*. Volume 1: Project Summary. Santa Monica, CA: System Development Corp.
- Keller, J.M. (1983). Motivational design of instruction. In C.M. Reigeluth (Ed.). *Instructional Design Theories and Models: An Overview of Their Current Status*. Hillsdale, NJ: Erlbaum.
- Keller, J.M. (1987, Oct.). Strategies for stimulating the motivation to learn. *Performance and Instruction*, 26, 1-7.
- Keller, J.M. (1987). *IMMS: Instructional Materials Motivation Survey*. John M. Keller, Florida State University.
- Keller, J.M. and Keller, B.H. (1992). *Motivational Delivery Checklist*. John M. Keller, Florida State University.
- Keller, J.M. and Suzuki, K. (1988). Use of the ARCS Model in software design. In D.H. Jonassen (Ed.). *Instructional designs for microcomputer courseware*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Rees, A.M. and Schultz, D.G. (1967). *A Field Experimental Approach to the Study of Relevance Assessments in Relation to Document Searching: Final Report, Volume I*. Cleveland, OH: Case Western Reserve University, School of Library Science, Center for Documentation and Communication Research.
- Schamber, L. (1994). Relevance and information behavior. In M.E. Williams (Ed.). *Annual Review of Information Science and Technology*, Medford, NJ: Learned Information, Inc.
- Taylor, R.S. (1986). *Value-added processes in information systems*. Norwood, NJ: Ablex